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TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371

ATTORNEY'S DOCKET NUMBER
205,510

U S. APPLICATION NO (If known, see 37 CFR 1 5)
10/049317

INTERNATIONAL APPLICATION NO.	INTERNATIONAL FILING DATE	PRIORITY DATE CLAIMED
PCT/AU00/00948	09 August 2000 (9.08.00)	09 August 1999 (9.08.99)

TITLE OF INVENTION

APPLICANT(S) FOR DO/EO/US

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. [X] This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.

2. [ ] This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.

3. [X] This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (21) indicated below.

4. [X] The US has been elected by the expiration of 19 months from the priority date (Article 31).

5. [X] A copy of the International Application as filed (35 U.S.C. 371(c)(2))
    a. [ ] is attached hereto (required only if not communicated by the International Bureau).
    b. [ ] has been communicated by the International Bureau.
    c. [ ] is not required, as the application was filed in the United States Receiving Office (RO/US).

6. [ ] An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).
    a. [ ] is attached hereto.
    b. [ ] has been previously submitted under 35 U.S.C. 154(d)(4).

7. [X] Amendments to the claims of the International Aplication under PCT Article 19 (35 U.S.C. 371(c)(3))
    a. [ ] are attached hereto (required only if not communicated by the International Bureau).
    b. [ ] have been communicated by the International Bureau.
    c. [ ] have not been made; however, the time limit for making such amendments has NOT expired.
    d. [ ] have not been made and will not be made.

8. [ ] An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371 (c)(3)).

9. [X] An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).

10. [ ] An English lanuage translation of the annexes of the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11 to 20 below concern document(s) or information included:

11. [ ] An Information Disclosure Statement under 37 CFR 1.97 and 1.98.

12. [X] An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.

13. [ ] A FIRST preliminary amendment.

14. [ ] A SECOND or SUBSEQUENT preliminary amendment.

15. [ ] A substitute specification.

16. [ ] A change of power of attorney and/or address letter.

17. [ ] A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825.

18. [ ] A second copy of the published international application under 35 U.S.C. 154(d)(4).

19. [ ] A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).

20. [X] Other items or information:
(1) International Application published under PCT;
(2) International Search Report;
(3) Request to examine claims 1-28 as originally filed in PCT application.

U.S APPLICATION NO. (if known, see 37 CFR 1 ...) 10/049317	INTERNATIONAL APPLICATION NO PCT/AU00/00948	ATTORNEY'S DOCKET NUMBER 205,510

21.[X] The following fees are submitted:	CALCULATIONS PTO USE ONLY

BASIC NATIONAL FEE (37 CFR 1.492 (a)(1)-(5)):

Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO $1040.00

International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO $890.00

International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO $740.00

International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(I)-(4) $710.00

International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(I)-(4) $100.00

ENTER APPROPRIATE BASIC FEE AMOUNT =				$ 1,040.00	
Surcharge of **$130.00** for furnishing the oath or declaration later than [ ] 20 [ ] 30 months from the earliest claimed priority date (37 CFR 1.492(e)).				$	
CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE	$	
Total claims	28 - 20 =	8	x **$18.00**	$ 144.00	
Independent claims	3 - 3 =	0	x **$84.00**	$ 0.00	
MULTIPLE DEPENDENT CLAIM(S) (if applicable)			+ **$280.00**	$ 0.00	
TOTAL OF ABOVE CALCULATIONS =				$ 1,184.00	
[ ] Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above are reduced by 1/2. +				$ 0.00	
SUBTOTAL =				$ 1,184.00	
Processing fee of **$130.00** for furnishing the English translation later than [ ]20 [ ]30 months from the earliest claimed priority date (37 CFR 1.492(f)).				$	
TOTAL NATIONAL FEE =				$	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). **$40.00** per property +				$ 40.00	
TOTAL FEES ENCLOSED =				$ 1,224.00	
			Amount to be refunded:	$	
			charged:	$	

a. [X] A check in the amount of $ 1,224.00 to cover the above fees is enclosed.

b. [ ] Please charge my Deposit Account No. _____ in the amount of $ _____ to cover the above fees. A duplicate copy of this sheet is enclosed.

c. [X] The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 01-0035 A duplicate copy of this sheet is enclosed.

d. [ ] Fees are to be charged to a credit card. **WARNING:** Information on this form may become public. **Credit card information should not be included on this form.** Provide credit card information and authorization on PTO-2038.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137 (a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO
Thomas E. Spath
ABELMAN FRAYNE & S
150 East 42nd Street
New York, NY 10017

February 8, 2002

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This correspondence is being Deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR § 1.10 on the date indicated above and addressed to:
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SIGNATURE

Thomas E. Spath
NAME

25,928
REGISTRATION NUMBER

ABELMAN, FRAYNE & SCHWAB
Attorneys at Law
150 East 42nd Street
New York, NY 10017-5612

Lawrence E. Abelman
Jeffrey A. Schwab
Victor M. Tannenbaum
Peter J. Lynfield
Alan J. Hartnick
Caridad Piñeiro Scordato
Michael Aschen
Julianne Abelman
Jonathan W. Gumport
Marsha G. Ajhar
Julie B. Seyler
Marie Anne Mastrovito
Joseph J. Catanzaro

Of Counsel:
Norman S. Beier
Alan D. Gilliland
Thomas E. Spath
Howard R. Jaeger
Richard L. Crisona

Gabriel M. Frayne (1929 - 2000)

Telephone: (212) 949-9022
Facsimile: (212) 949-9190

Cable: LAWABEL New York
Telex: 661108 and 276592
Internet: e-mail@lawabel.com

Jay S. Cinamon
Anthony J. DiFilippi
Wayne J. Gu*
Anthony A. Coppola
Michael J. Schwab
Jennifer R. Waitman
Lori B. Cohen
Natasha J. Finlen
Stephen J. Quigley
Frank Terranella

Dennis A. Mason
U.S. Patent Agent

*Member MD Bar Only

February 8, 2002
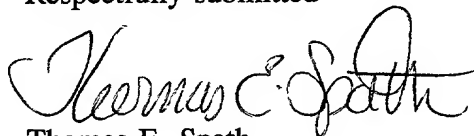
Assistant Commissioner for Patents
Washington, D.C. 22202

Re: National Phase Filing
       PCT/AU00/00948
       Request to Examine Original Claims
       AFS: 205,510 (PCT)

Sir:

Applicant requests that the claims 1-28 as originally filed in the PCT application be examined. Applicant requests that the set of amended claims submitted April 27, 2001 during Chapter II proceeding be given no consideration at this time by the U.S. PTO and that the amended claim set be effectively canceled.

Respectfully submitted

Thomas E. Spath

PRIZE AWARDING SYSTEM

This invention relates to a prize awarding system. In particular, the invention is directed to method and apparatus for awarding a prize to players of gaming machines, wherein the probability that the player of a

5   gaming machine will win the prize is dependent upon the amount bet on that gaming machine during an elapsed period.

BACKGROUND ART

An electronic gaming device (EGD), such as a poker machine, provides its player with the opportunity to win cash or other prizes. To entice

10   more persons to play EGDs and/or to render them more exciting, it is known to link EGDs electronically in a network, with each EGD contributing a proportion of its turnover to a pooled jackpot. The EGDs in a network may be located on one site, or spread over several remote sites. Since a larger number of EGDs contribute to the jackpot, the jackpot can have a higher

15   value and/or be won more often than single machine jackpots.

In a typical progressive linked jackpot system, one or more EGDs contribute a percentage of turnover to a pool (either on a local or external network). Each time an EGD is played, it tests for a particular winning combination. If that combination is achieved, the EGD is awarded the pool. A

20   key aspect of this arrangement is that each game played has the same probability of a jackpot win.

This arrangement has traditionally been used by casinos but its popularity is diminishing due to the introduction of EGDs featuring multiple line and multiple credits per line wagering options. If a player elects to play

25   multiple credits per line, the win probability would no longer be proportional to the wager. That is, the win probability would be the same regardless of the number of credits wagered on the line. This is considered a major disincentive to wagering multiple credits per line. This arrangement also requires the EGD to provide special software which tests for the winning combination. Further, it

30   is difficult to link EGDs of differing base denominations to the same progressive jackpot pool.

Another type of jackpot system is described in Australian patent no. 655801. In this type of jackpot system, one or more EGDs are typically

connected to an external Random Jackpot Controller (RJC) via a data network. As each game is played, the RJC adds a proportion of each wager to the external pool. The RJC initially seeds the pool with a starting value. The RJC then selects a random number between the starting value and a predetermined maximum value. As each EGD is played, each EGD informs the RJC of the credits bet and a proportion of the wager is added to the pool. The value of the pool is then compared with the selected random number. If there is a match, the RJC awards the current pool value to that EGD. This arrangement is usually configured to provide relatively small but frequent awards, and has the inherent characteristic that the probability of a win on each EGD increases as the pool increases toward the maximum limit.

However, since the win probability increases as the pool increases towards its predetermined maximum limit, a player playing just after the pool is reset has a lower jackpot win probability than a player playing at a later time when the pool is greater, even though both players may be wagering the same amount. For this reason, this arrangement is generally considered unfair and deterministic. The deterministic nature of this jackpot system has led some gaming authorities to prohibit the inclusion of the pool contributions into the "Return to Player Percentage" (RTP) for taxation calculation purposes, which diminishes the financial appeal of this jackpot system to gaming machine operators.

Yet another type of jackpot system is described in international patent application no. PCT/AU98/00525. In that jackpot arrangement, one or more EGDs are typically connected to an External Feature Game Controller (EFGC) via a communications network. Each EGD informs the EFGC of credits bet and a proportion of the credits bet is added to the external jackpot pool. This pool is typically seeded with a starting value.

As each game is played (and only when a game is played), the EGD tests for the occurrence of a random "win" event whose probability is a function of the credits bet *on that particular game*. If the EGD detects the random event, the EFGC is informed. The EGD then typically enters a feature game where the winning amount is determined. The EFGC is informed of the win and in some cases will transmit the value of the win to the EGD's credit

meter. In other cases, the EGD will be locked up until the jackpot is paid manually by an attendant. The greater the wager per game the greater is the probability of a win on that game.

A disadvantage of this arrangement is that it is not easily applied to an existing EGD installation. Each EGD must be fitted with special software with a means of determining and detecting the random event *per game*. Alternatively, a communications-based Central Feature Game Controller (CFGC) may theoretically be employed which has a means of determining and testing for the random event per game on behalf of each EGD, based on the credits bet on each game.

Many jurisdictions have mandated the use of specialised communications networks designed to collect EGD data and to provide a means of external control over the EGDs. Some operators of these networks have implemented their own jackpot awarding systems utilising these networks. These networks however, cannot guarantee that each EGD's data will be collected in synchronisation with each EGD's *game cycle*. Further, many of these communications networks do not even support the collection of "credits bet" data from EGDs. In some cases there may be over 6 games played between data collections. If a CFGC utilised these networks for the collection of the credits bet information for the purpose of centrally determining the random event based on credits bet on each game, there would be a real likelihood that many played games would be missed due to the data collection latency of the communications systems. This would result in those games still contributing to the jackpot pool but with no chance of winning the prize. This makes it impractical to use credits bet per game as a basis for the determination of the random event on a game-by-game basis in a CFGC acting on behalf of each EGD.

A further problem with this jackpot arrangement is that once an EGD enters its feature game for the purpose of determining the actual prize, one of the available pools is always going to be awarded regardless of the feature game outcome. There is no technical barrier to a smart player deferring the playing of the feature game to allow the jackpot pool to increase in value. The longer the player waits, the greater the potential pool increase

and the greater the prize. In an extreme example, the player could wait until the feature game is triggered on another contributing EGD, then immediately play the feature game and effectively steal the other player's prize.

It is an object of this invention to provide an improved prize awarding system for a network of EGDs, which overcomes or ameliorates the above described disadvantages or which at least provides a useful alternative.

SUMMARY OF THE INVENTION

In one broad form, the invention provides a method of awarding a prize in a gaming system comprising at least one gaming machine, characterised in that the probability of each gaming machine winning the prize is dependent upon at least some of the amount wagered on that gaming machine during an elapsed period.

In the preferred embodiment, prize draws are held periodically. Prior to each prize draw, the probability of each gaming machine winning that draw is calculated.

In another form, the invention provides a gaming system comprising

at least one gaming machine;

control means connected to the gaming machine(s), the control means being adapted to conduct a series of prize draws in each of which each gaming machine has an opportunity to win a prize on a non-deterministic basis; and

means for determining the winning probability of each gaming machine at each prize draw,

characterised in that the probability of each gaming machine winning a prize draw is dependent on at least some of the amount wagered on that gaming machine during an elapsed period.

In yet another form, the invention provides a gaming machine having

means for effecting a prize draw to award a prize on a non-deterministic basis, and

means for determining the probability of the gaming machine

winning the prize,

characterised in that the probability of the gaming machine winning the prize is dependent on at least some of the amount wagered on the gaming machine during an elapsed period.

5   Preferably, the probability is related to the total wagered amount recorded during the elapsed period.

The elapsed period is typically a rolling or sliding period of time, preceding each prize draw.

Draws may be held at periodic intervals which are shorter than 10   the sliding period of time. In that case, the amount wagered during the period between draws is calculated on a *pro rata* basis from the recorded amount of wagers during the predetermined elapsed period.

The prize may suitably be a cash prize, such as a progressive jackpot.

15   In a further embodiment of the invention, if a gaming machine wins a prize draw, it is awarded a feature game to determine the actual prize or jackpot. All jackpot pools are suspended until the feature game is played.

Advantageously, the probability of a gaming device winning the prize draw, and/or the relative probabilities of the gaming machines winning 20   the prize draw, are displayed graphically.

The prize awarding system of this invention enables a jackpot or other prize to be awarded on a non-deterministic basis, yet in a fair manner, as the probability that a gaming machine will win the prize depends on the amount of recent betting activity on that gaming machine.

25   In order that the invention may be more fully understood and put into effect, preferred embodiments thereof will now be described with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a block diagram of a jackpot system for a network of 30   gaming devices.

Fig. 2 is a flow chart for the method of jackpot pool calculation.

Fig. 3 is a flow chart for the method of determining a jackpot win according to one embodiment.

Fig. 4 is a flow chart for the method of calculating jackpot pool and determining jackpot win according to a second embodiment.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

In one embodiment, illustrated schematically in Fig. 1, a plurality
5   of Electronic Gaming Devices (EGDs) 10 operating in a modern gaming environment are connected to a communications network 11, typically running over RS485, Fibre Optic, Ethernet, or other suitable data transmission cable. The communications network 11 has an EGD monitoring device 12, such as a site controller or polling front-end processor. The EGD monitoring device will
10   be referred to as the monitoring system. The monitoring system 12 collects financial and other information from the EGDs. This information is commonly referred to as "meters".

The monitoring system 12 contains a Special Prize Presentation Controller Task which in this embodiment, is a jackpot controller 13 capable
15   of maintaining one or more jackpot pools. The jackpot controller 13 displays the current value of each jackpot pool on one or more jackpot displays 14. These displays may be remote from the EGDs, either connected to the communications network 11 or to the jackpot controller 13 directly.

The gaming system may optionally include an alternative or
20   additional jackpot controller 13A with its associated display 6. The EGDs may also have local jackpot displays 15 which may be operated by the jackpot controller(s), via the communication network.

The jackpot controller 13 calculates and manages the jackpot pools from the information provided to it by the monitoring system 12. The
25   only meter required by the jackpot controller from the monitoring system is the current value of the turnover meter of each EGD. The turnover meter is represented in local base currency units (e.g. cents). The turnover meter usually indicates the *accumulated* turnover, e.g. credits bet, since the EGD was commissioned. The jackpot controller calculates from the received
30   turnover meter reading, the change in turnover since the last time the turnover meter was read. This is the primary figure used for all jackpot calculations.

For each jackpot, the jackpot controller maintains a prize pool.

This prize pool is a calculated pool, comprising (i) a starting value of the jackpot, and (ii) a proportion, equal to the contribution percentage, of the increased turnover of each EGD contributing to the pool since the last jackpot was won. For example a jackpot pool with a 3% contribution will increase by 3

5   cents for every dollar wagered on an EGD connected to the jackpot. This pool is normally the prize granted to the winning player when a jackpot is won.

In the jackpot system of this embodiment, the probability of an EGD winning the jackpot is dependent upon the turnover of that EGD over a predetermined elapsed period of time. This period of time is a sliding or rolling

10   "window" of time prior to each jackpot draw.

Every change in turnover meter recorded for an EGD is stored by the jackpot controller with a timestamp. The timestamp indicates the time that the change in turnover meter was recorded. Each recorded change in turnover meter may contain the turnover from multiple game plays. It is

15   possible that there may be no change in turnover meter since the last record, in which case a change in turnover meter of zero cents is recorded. Only turnover recorded within the sliding time window or "Record Period" is used for the purposes calculating the probability of a jackpot win.

For example, Table 1 shows the turnover information recorded

20   for three EGDs for a Record Period equal to the immediately preceding 30-second period. The turnover meters of the EGDs are nominally read approximately once every 10 seconds. The current time for the purpose of the example is 10:29:20. Hence the relevant window of time or Record Period was that period between 10:28:50 and 10:29:20.

25   As shown in Table 1, EGD 1 had its change in turnover meter recorded approximately every 8 Seconds, EGD 2 approximately every 7 Seconds and EGD 3 approximately every 11 Seconds. This variation is due to operational variances across machines such as type, model, vintage, manufacturer and network characteristics.

30   Table 2 shows the changes in turnover meter recorded for the same three EGDs at 10:29:30, i.e. after a further 10 seconds have elapsed. The relevant window of time or Record Period is now that period between 10:29:00 and 10:29:30.

During the further 10 second period, several recorded values aged to a point where they were greater than 30 seconds old, and were therefore discarded. For each EGD one new change in turnover was recorded. The discarded turnover values are shown in Table 3.

5   It can be seen from the tables that the rolling Record Period allows for variations in operational characteristics by collating all turnover changes during a sliding period. This allows all machines to have a fairer record of activity than individual change in turnover meter figures. Individual turnover figures per EGD may be recorded at varying frequencies. By running

10   a sliding window any variation in operational characteristics can be normalized.

In this embodiment, the method of determining the winner of a jackpot employs a second time window, known as the Draw Period. The Draw Period is the duration between attempts at awarding the jackpot, or in other

15   words, the duration between opportunities for an EGD to win the jackpot, known as jackpot "draws". To ensure that no turnover change is excluded from the draw processing, the Draw Period can equal, but not exceed the Record Period.

The probability that an EGD will win a jackpot draw depends on

20   a calculated scaling factor. In this embodiment, the scaling factor is based on estimated turnover during the Draw Period which is calculated by taking, for each EGD, the total turnover in the Record Period, and dividing it by the number of Draw Periods per Record Period. (Because a division is involved, any fractional cent of the result is counted as one whole scaling unit). That is,

25   based on actual turnover during the whole Record Period, an estimated or average turnover is calculated for the Draw Period on a *pro rata* basis. If the turnover is in cents, then the Scaling Factor is the number of cents in the estimated turnover during the Draw Period.

For example, using the data from the EGDs above, if the Record

30   Period is 30 Seconds, and the Draw Period is 10 Seconds, Table 4 shows the calculated Scaling Factor for each EGD for the two draw times given as examples above.

The Scaling Factor determines the probability than an EGD will

win the jackpot at a draw time. Namely, each EGD has the same predetermined "base" probability of winning the jackpot, but this is multiplied by the Scaling Factor for that EGD for the relevant draw. Since an EGD can have a varying scaling factor, it also has a varying probability of winning a

5   jackpot draw. This probability is given by the formula:

EGD Win Probability =

$$1 - ((1 - \text{Fixed Base Probability})^{\text{Scaling Factor}}).$$

10   Thus, if the base probability is, say, a 0.0003% chance, the probability of each EGD in Table 4 winning the Jackpot at each of the two draw times is shown in Table 5.

          The jackpot draw for each EGD can be conducted by any suitable draw method which has the required overall probability. For example,

15   a random number generator can be used for the draw. A fixed number range is defined, and divided into two separate sections, the winning band and the losing band. A random number is generated over the entire range; if it falls within the winning band the draw is won. If it falls outside the wining band into the losing band, the draw is lost. The winning band is a percentage of the

20   entire number range, which is equal to the desired win probability.

          Thus, if the win probability is 0.1400%, and the number range is, say, 0 to 4294967295, the winning band is all the numbers from 0 to 6012954. The losing band is then 6012955 to 4294967295. When calculating the win band size, because division is involved, all results are rounded up to

25   the next whole digit in the range. If the random number generated falls within the winning band and the attempt at awarding the prize succeeds. Otherwise the attempt fails. Table 6 gives the varying win band sizes for the probabilities given in Table 5.

          If an EGD wins a draw, the EGD is placed into a winning mode

30   and the prize won is advertised on the displays 14, 15. The act of awarding a prize need not necessarily terminate the draw processing and it is possible for another EGD to be selected as a winner in its draw. If there are multiple winners, the prize pool is preferably paid to the first detected winner and all

other winners are awarded the reset or starting value of the pool. Alternatively, the prize pool is apportioned between all the winners.

Table 7 shows the assumptions and configuration options of a typical high win rate, small prize Jackpot Pool.

5   Table 8 gives the operational characteristics of a jackpot so configured, operating as described by this embodiment.

For the embodiment having the parameters and operational characteristics specified in Table 8 and Table 9, a typical sequence of events for the jackpot would be as follows:

10   Referring to the flow chart of Fig. 2, the jackpot is started at its reset or starting value ($50.00). Players bet credits on the EGDs, and contribute to the accumulated turnover on each EGD. A percentage of the change in turnover meters of all EGDs since the start of the jackpot is added to the jackpot pool such that after 2 hours of play, the Jackpot would be

15   expected to be worth approximately $75.00 ($50.00 + $25.00 from contributions). Any change in turnover meter for each EGD would be recorded as it is calculated in the sliding 30-second time window. All jackpot pool displays are updated with the new value reflecting added contributions from EGDs in play. When the pool has been won, the prize is awarded to the

20   winning EGD and the winning state of the EGD is cleared.

In parallel with calculating the current jackpot value, the Jackpot Controller 13 conducts jackpot draws. Referring to Fig. 3, a Draw Period window timer is initialized to produce 10-second timeouts, and is started. As each 10-second draw period elapses, the jackpot controller, starting from the

25   first EGD, scans progressively through the EGDs calculating the Scaling Factor for each EGD from (i) change in turnover meter of the respective EGD in the Record Period, i.e. the last 30 seconds and (ii) the number of Draw Periods per Record Period, i.e. 3. Each EGD has a jackpot draw. It is to be noted that the timing of the draws is independent of games played on the

30   EGD. The Scaling Factor is used to determine each EGD's respective probability of winning the jackpot. If the jackpot is won by an EGD, the EGD is placed into a winning state. Each EGD is processed in this manner until all EGDs have been processed.

This process of looking for a winner occurs continuously (every Draw Period) and is independent of the accumulation of the Jackpot Pool. As time since the Jackpot start increases, due to the increasing number of attempts to win the prize, it becomes statistically more likely that the jackpot

5   will be granted. When the jackpot is won, the prize to be paid is held at the current jackpot value, and a new jackpot prize is started. The Jackpot Controller suspends the winning EGD and the winning amount is advertised on the jackpot display. Once the winning value is verified, it is paid to the player of the winning EGD. Payment is preferably credited electronically

10   directly to the EGD that won. After the jackpot is granted to a player, it is reset and continues from the starting value ($50.00).

There are various alternative implementations that achieve the same or similar outcome as the preferred embodiment. For example, the draw could be conducted with a fixed number of attempts, say 10,000 and all

15   attempts occur every draw. The attempts are apportioned to the EGDs based on their relative turnovers over the Record Period.

Further, the probability of winning the jackpot may be based on only some of the amount wagered in the Record Period, such as the maximum bet on any one game in that period, or the amount wagered in the

20   Record Period statistically conditioned to remove abnormally small or large bets.

The calculated probability of a jackpot win can be displayed on the EGD displays 15. These displays can include a graphical indicator that informs the player of the chance of winning the Jackpot, based on average

25   turnover over the Record Period for each EGD. The EGD display may be a rumbling volcano. The higher turnover over time played on the EGD, the fierier the volcano becomes. These displays can be controlled by the jackpot controller so that the volcano erupts on the EGD that wins the prize. Further, a leader board can be shown on an external display 14, that lists the EGDs in

30   order from highest probability of win to lowest. These displays are designed to enhance player appeal and to create atmosphere for the Linked jackpot Game.

In a second preferred embodiment, when an EGD wins a draw,

the EGD is informed of the win and instructed to enter a second Screen Feature Game for the purpose of determining the Jackpot Prize to be awarded. At this time, all eligible Jackpot pool values on display are suspended, i.e. held at their current values and no longer visibly increment.

5   Preferably, the display then enters a special "About to win a Jackpot Mode" to heighten excitement. Once the player has completed the second screen feature and the jackpot prize has been determined, the winning EGD informs the Jackpot Controller of the claimed prize. The Jackpot Controller then updates all jackpot pools other than the winning jackpot to their current value

10   (using a percentage of all turnover accumulated since the jackpot values were held). The player is awarded the held value of the winning jackpot and the winning jackpot is reset to the starting value, plus a percentage of any turnover accumulated while the jackpot values were held. Preferably, the Jackpot Display will show a Jackpot Win sequence.

15   The jackpot win does not terminate the draw processing and it is possible for another EGD to win. Should there be multiple winners, each EGD will be placed into the second Screen Feature to determine the prize. Once the prize is determined, the EGD wins that prize. If multiple EGDs claim the same prize, the first EGD to claim will receive the full jackpot amount on

20   display. The other EGDs that claim the same prize will win the jackpot reset value.

In a variation of this embodiment, multiple EGDs claiming the same prize simultaneously may share the prize.

A typical sequence of events for this second embodiment is

25   shown in Fig. 4. The jackpots in a group are all reset to their starting values. Players bet credits on the EGDs, and contribute to the accumulated turnover on each EGD. A percentage of the change in turnover since the start of the jackpot is added to the jackpot pool. The change in turnover is recorded in the sliding 30-second time window. All relevant jackpot displays are updated with

30   the new values for each pool. If any EGD wins the pool, the pools are suspended at their current values. The winning EGD is instructed to run a second screen feature game for the purposes of determining the prize to pay. The EGD runs its second screen game as instructed. Once the EGD reports

the outcome of the second Screen Game, the claimed prize is paid to the winning EGD. The winning status of the EGD is cleared. The claimed pool is reset to its starting value and all jackpot pools are released and allowed to update based on turnover. Any turnover contributed while the pools were held

5   is added into the pools after they are released.

Various modifications can be made to the foregoing without departing from the scope of the invention. For example, each EGD can maintain its own sliding Record Period and Draw Period, independent of any other EGD in the Jackpot Pool. When an EGD determines that it is going to

10   win, it informs the controller to suspend all jackpots at their current values and presents the second screen feature game to the player automatically. Once the second screen feature game is complete and a prize has been determined, the EGD informs the Jackpot Controller of the determination. The Jackpot Controller then pays the claimed prize to the player and resets it.

15   It also allows the other jackpot pools to increment again, and adds any contributions from turnover that occurred while the pool was suspended.

In a system where the Jackpot Pools may not be suspended due to limitations in the communications network, the second Screen Feature Game can be equipped with a timeout that forces a determination should the

20   player not play within a reasonable time frame. This prevents one player effectively robbing some or all of the subsequent jackpot prize from another player by excessively delaying the claim on the prize pool.

The above described embodiments of a prize awarding system have several advantages over the prior art systems, including

25

- Each eligible player or gaming machine has the opportunity of winning a prize, with the probability of a win being dependent upon the amount of betting activity on that machine over a recent period, and not just the last game. This provides a fairer outcome as machines with a higher average

30   turnover during that period have a higher win probability than machines with a lower average turnover during the same period even though the latter machines may have had a higher wager on the last game.

- The trigger for a draw is not a function of individual games played on a gaming machine. Rather it is a function of time. Therefore, the prize awarding system may be applied to existing EGDs of differing base denomination, manufacturer or game type without the need for specialised
5 software support from the EGDs. The system can also be operated over existing communication networks and with centralised jackpot systems, including those with high poll latency timings.

- Since the prize awarding is non-deterministic, the prizes can be included
10 in the "return to player percentage" of a gaming system, effectively resulting in higher profitability for the operator of the gaming devices.

- Prize awarding parameters may be changed by the gaming device operator at any time without any alterations to the hardware, firmware or
15 internal parameters of any of the associated EGDs.

- If the awarding of the prize involves a feature game, a fairer outcome is obtained by ensuring that the value of all prize pools is suspended until the completion of the feature game. This prevents players from gaining a
20 financial advantage over subsequent players by delaying the playing of the feature game.

Table 1 : Recorded Turnover for 30 Seconds

EGD	Time of Read	Change in Turnover
1	10:29:20	$4.35
	10:29:12	$5.15
	10:29:04	$3.45
	10:28:58	$1.05
	TOTAL	$14.00
2	10:29:18	$0.36
	10:29:11	$0.59
	10:29:04	$0.47
	10:28:58	$0.11
	10:28:51	$0.73
	TOTAL	$2.26
3	10:29:19	$1.10
	10:29:08	$0.90
	10:28:57	$1.50
	TOTAL	$3.50

Table 2 : Turnover Recorded after a Further 10 Seconds

EGD	Time of Read	Change in Turnover
1	10:29:28	$2.15
	10:29:20	$4.35
	10:29:12	$5.15
	10:29:04	$3.45
	TOTAL	$15.10
2	10:29:25	$0.94
	10:29:18	$0.36
	10:29:11	$0.59
	10:29:04	$0.47
	TOTAL	$2.36
3	10:29:30	$2.40
	10:29:19	$1.10
	10:29:08	$0.90
	TOTAL	$4.40

5

Table 3 : Discarded Turnover > 30 Seconds Old

EGD	Time of Read	Change in Turnover
1	10:28:58	$1.05
2	10:28:58	$0.11
	10:28:51	$0.73
3	10:28:57	$1.50

17

Table 4 : Example Scaling Factor Calculations

Draw Time	EGD#	Total Turnover in Record Period	Draws/Record Period	Scaling Factor
10:29:20	1	$14.00	3	467
	2	$2.26	3	76
	3	$3.50	3	117
10:29:30	1	$15.10	3	504
	2	$2.36	3	79
	3	$4.40	3	147

5

Table 5 : Variable Probability of Win per Draw per EGD

Draw Time	EGD #	Scaling Factor	Fixed Base Probability	Variable Win Probability
10:29:20	1	467	0.0003%	0.1400%
	2	76	0.0003%	0.0228%
	3	117	0.0003%	0.0351%
10:29:30	1	504	0.0003%	0.1511%
	2	79	0.0003%	0.0237%
	3	147	0.0003%	0.0441%

Table 6 : Win Band Size for Variable Probabilities with a maximum range of 0 - 4294967295

Draw Time	EGD #	Variable Win Probability	Win Band Size
10:29:20	1	0.1400%	0 – 6012954
	2	0.0228%	0 – 979252
	3	0.0351%	0 – 1507533
10:29:30	1	0.1511%	0 – 6489694
	2	0.0237%	0 – 1017907
	3	0.0441%	0 – 1894080

5

Table 7 : Assumptions and Desired Configuration of a Jackpot Pool

No of EGDs	10
Average Daily Turnover per EGD	$1500.00
Hours in a Trading Day	18
Reset Value of the Prize	$50.00
Desired Maximum Value of the Prize	$150.00
Average Increase to RTP% of the connected EGDs	3%
Turnover Sliding Window	30 Seconds
Draw Time	10 Seconds

Table 8 : Operating Characteristics of this Embodiment

Average Winning Value	$100.00
Average Duration between wins	4 Hours
Win Probability	0.0003%
Pool Increment Rate	1.5%
Minimum of the Winning band for 0.0003% prob.	0
Maximum of the Winning band for 0.0003% prob.	12884
Minimum of the Failing band for 0.0003% prob.	12885
Maximum of the Failing band for 0.0003% prob.	4294967295

CLAIMS:

1.   A method of awarding a prize in a gaming system comprising at least one gaming machine, characterised in that the probability of each gaming machine winning the prize is dependent upon at least some of the

5   amount wagered on that gaming machine during an elapsed period.

2.   A method as claimed in claim 1 wherein the probability is related to the total wagered amount recorded during the elapsed period.

3.   A method as claimed in claim 1 wherein the probability is related to the maximum amount wagered on a game during the elapsed period.

10   4.   A method as claimed in claim 1, wherein the elapsed period is a rolling or sliding period of time.

5.   A method as claimed in claim 1, including the step of conducting a series of prize draws and, prior to each prize draw, calculating the probability of each gaming machine winning that draw.

15   6.   A method as claimed in claim 5, wherein the elapsed period is a predetermined period preceding each draw, further comprising the steps of recording amounts wagered on each gaming machine and calculating the probability of each gaming machine winning that draw from amount(s) recorded during the predetermined period.

20   7.   A method as claimed in claim 6, wherein the draws are conducted at periodic intervals of time, the period between draws being no greater than the predetermined period.

8.   A method as claimed in claim 7, wherein the winning probability for each gaming machine is calculated from the estimated amount wagered

25   on that gaming machine during the period since the last draw, the estimated amount being calculated on a *pro rata* basis from the recorded amount of wagers during the predetermined period.

9.   A method as claimed in claim 5, further comprising the step of awarding to a draw winning gaming machine a further game to determine the

30   actual prize won.

10.   A method as claimed in claim 9, wherein the time allowed for playing the further game is limited to a predetermined period.

11.   A method as claimed in claim 9, wherein the prize is a jackpot or

one of a plurality of jackpots, the method further comprising the step of suspending the jackpot(s) until the determination of the further game.

12.   A method as claimed in claim 1, wherein the prize is a jackpot pool.

5   13.   A method as claimed in claim 12, wherein the jackpot pool comprises an initial amount and a proportion of the amount wagered on the gaming machine(s) since the jackpot pool was reset.

14.   A method as claimed in claim 1, further comprising the step of displaying a graphical representation of the probability of the gaming

10   machine(s) winning the prize.

15.   A method as claimed in claim 14 wherein the gaming system includes a plurality of gaming machines, and the probabilities are displayed in relative format.

16.   A method as claimed in claim 1, wherein each gaming machine

15   is an electronic gaming device.

17.   A gaming system comprising

at least one gaming machine;

control means connected to the gaming machine(s), the control means being adapted to conduct a series of prize draws in each of which

20   each gaming machine has an opportunity to win a prize on a non-deterministic basis; and

means for determining the winning probability of each gaming machine in each prize draw,

characterised in that the probability of a said gaming machine

25   winning a prize draw is dependent on at least some of the amount wagered on that gaming machine during an elapsed period.

18.   A gaming system as claimed in claim 17 wherein the probability of a said gaming machine winning a prize draw is related to the total wagered amount recorded during the elapsed period for that gaming machine.

30   19.   A gaming system as claimed in claim 17, wherein the elapsed period is a rolling or sliding predetermined period of time prior to each prize draw.

20.   A gaming system as claimed in claim 19, wherein the control

means includes means for recording during the predetermined period amounts wagered on each gaming machine.

21.   A gaming system as claimed in claim 17, wherein the control means includes a jackpot controller, and the prize is a progressive linked jackpot.

22.   A gaming system as claimed in claim 17, wherein each gaming machine is an electronic gaming device.

23.   A gaming system as claimed in claim 17, having display means to display a graphical representation of the probability of each gaming machine of winning the prize draw.

24.   A gaming machine having

means for effecting a prize draw to award a prize on a non-deterministic basis, and

means for determining the probability of the gaming machine winning the prize,

characterised in that the probability of the gaming machine winning the prize is dependent on at least some of the amount wagered on the gaming machine during an elapsed period.

25.   A gaming machine as claimed in claim 24, wherein the probability is related to the total wagered amount recorded during the elapsed period.

26.   A gaming machine as claimed in claim 24 wherein the elapsed period is a sliding or rolling predetermined period prior to the prize draw.

27.   A gaming machine as claimed in claim 26, further comprising means for recording during the predetermined period amounts wagered on the gaming machine.

28.   A gaming machine as claimed in claim 24 having display means to present a graphical representation of the probability of winning the prize draw.
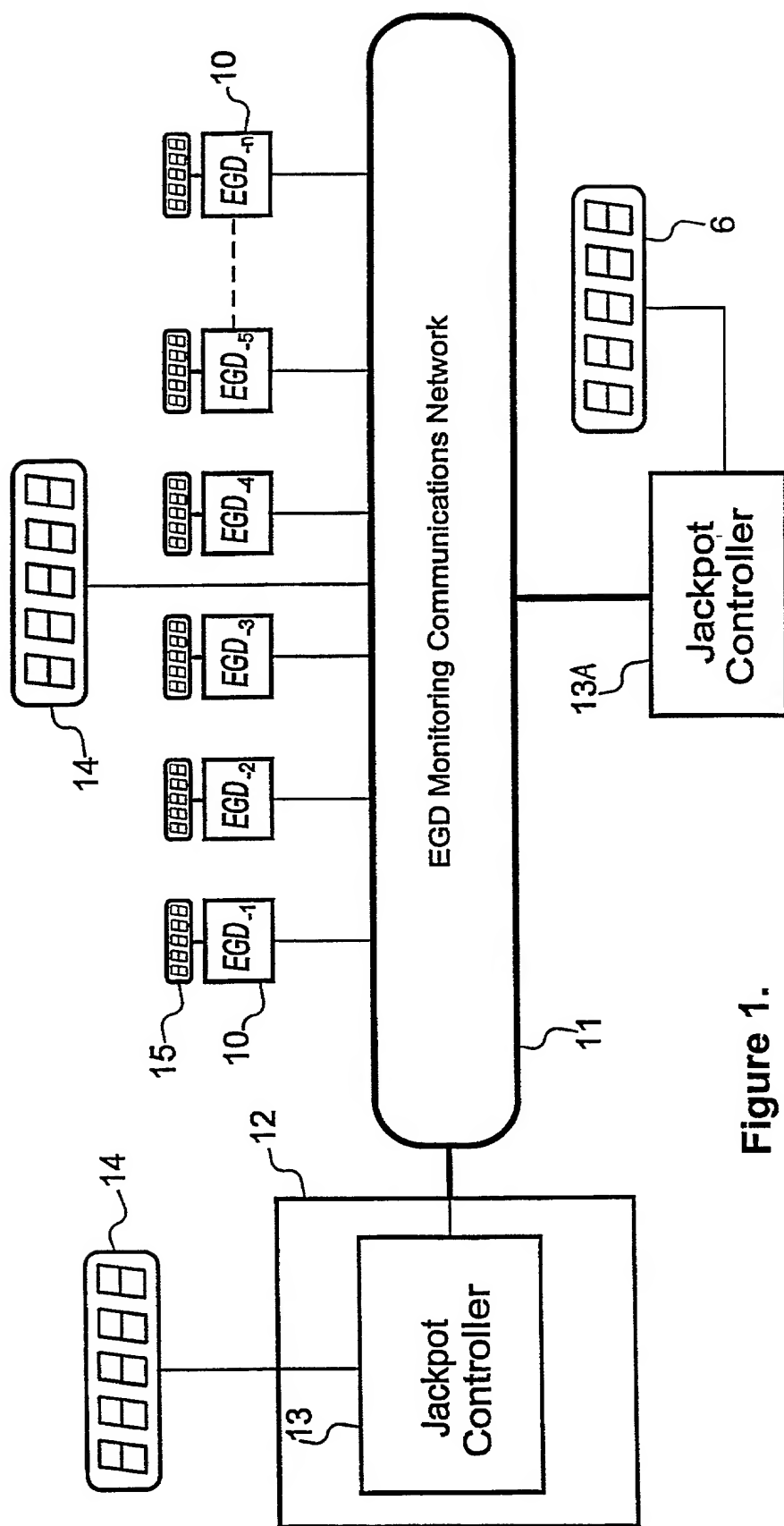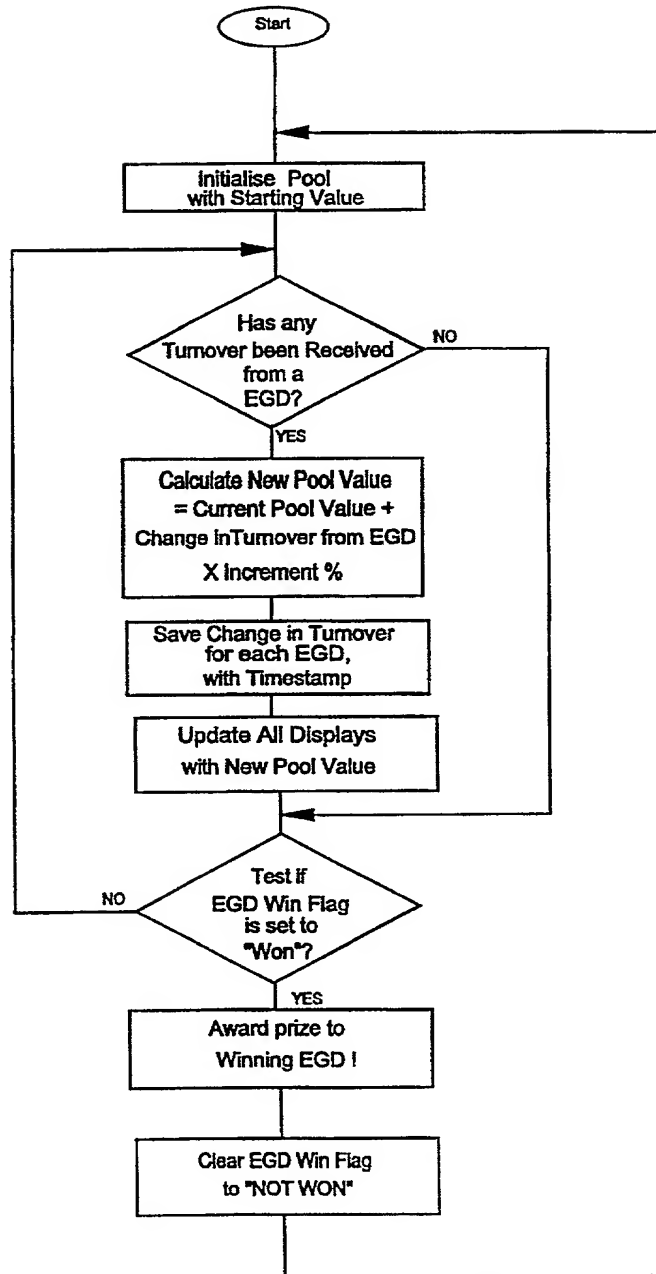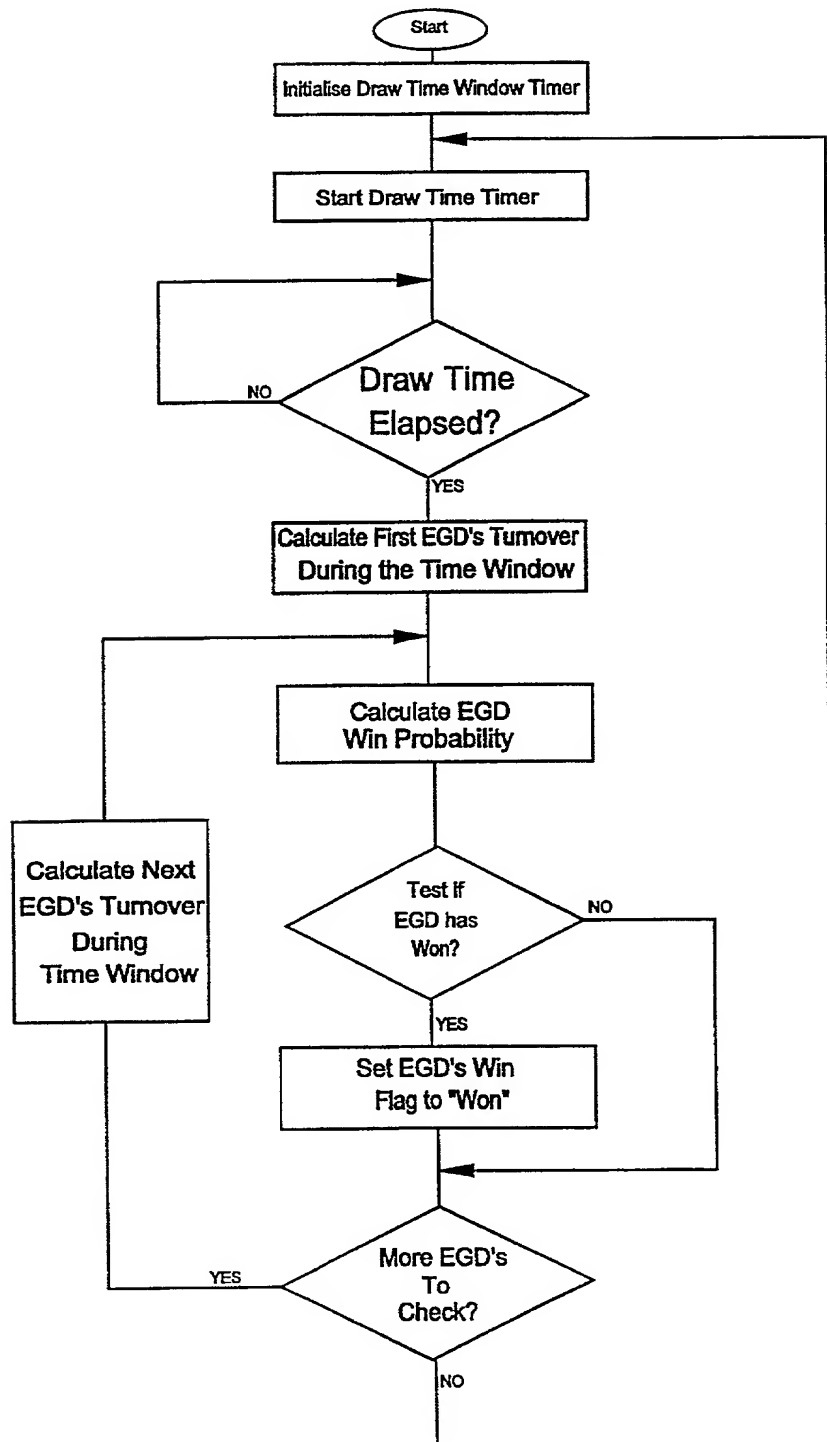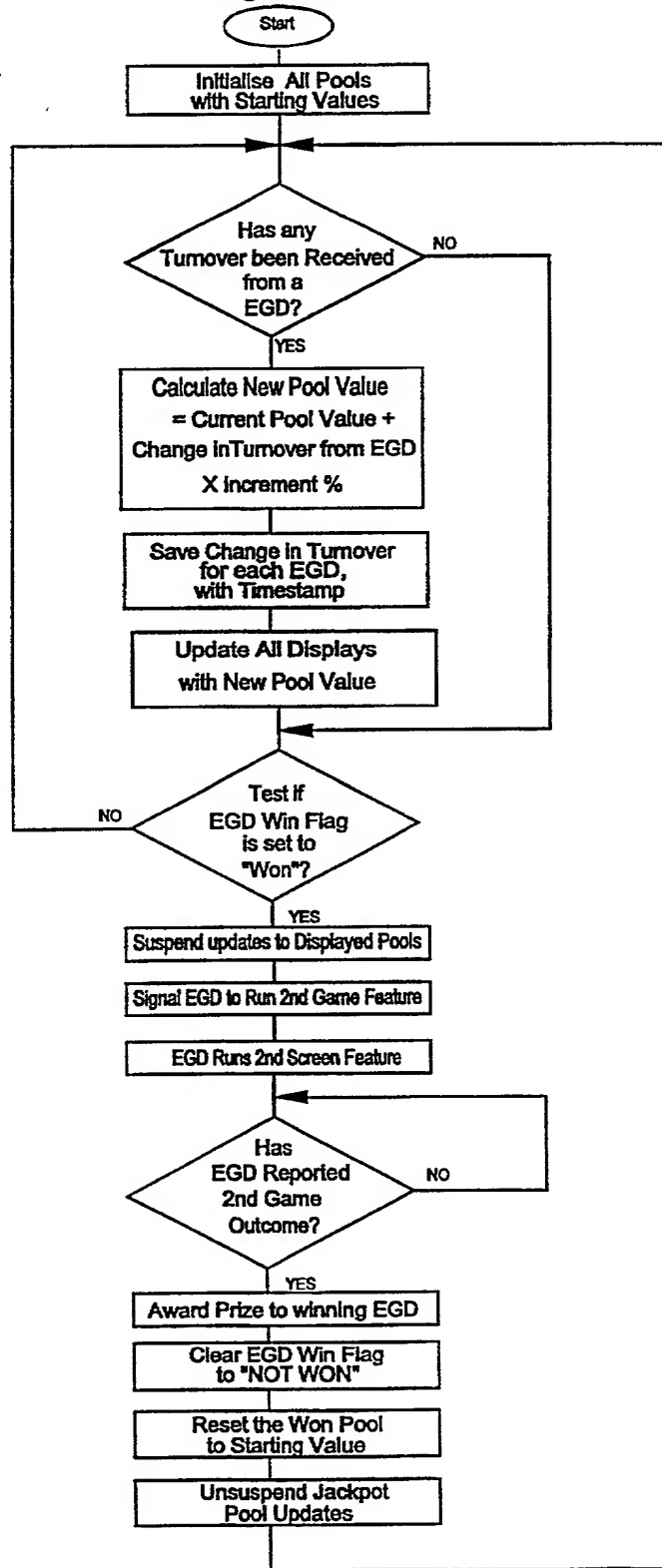
Figure 1.

Figure 2.

Figure 3.

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Figure 4.

```
                    ( Start )
                        │
          ┌─────────────────────────┐
          │  Initialise All Pools   │
          │   with Starting Values  │
          └─────────────────────────┘
                        │
      ┌─────────────────┴──────────────────────────┐
      │                 │                            │
      │            ╱─────────╲                       │
      │           ╱  Has any  ╲      NO              │
      │          ╱ Turnover been╲──────────┐         │
      │          ╲  Received     ╱          │         │
      │           ╲ from a      ╱           │         │
      │            ╲  EGD?      ╱            │         │
      │             ╲─────────╱             │         │
      │               │ YES                 │         │
      │    ┌────────────────────────────┐   │         │
      │    │  Calculate New Pool Value  │   │         │
      │    │  = Current Pool Value +    │   │         │
      │    │ Change InTurnover from EGD │   │         │
      │    │      X Increment %         │   │         │
      │    └────────────────────────────┘   │         │
      │               │                     │         │
      │    ┌────────────────────────────┐   │         │
      │    │   Save Change in Turnover  │   │         │
      │    │       for each EGD,        │   │         │
      │    │       with Timestamp       │   │         │
      │    └────────────────────────────┘   │         │
      │               │                     │         │
      │    ┌────────────────────────────┐   │         │
      │    │   Update All Displays      │   │         │
      │    │    with New Pool Value     │   │         │
      │    └────────────────────────────┘   │         │
      │               │                     │         │
      │               ├─────────────────────┘         │
      │          ╱─────────╲                           │
      │    NO   ╱  Test if   ╲                          │
      │   ┌─────╱ EGD Win Flag╲                         │
      │   │     ╲  is set to  ╱                         │
      │   │      ╲  "Won"?   ╱                          │
      │   │       ╲─────────╱                           │
      │   │          │ YES                              │
      │   │  ┌──────────────────────────────┐          │
      │   │  │ Suspend updates to Displayed Pools │     │
      │   │  └──────────────────────────────┘          │
      │   │          │                                  │
      │   │  ┌──────────────────────────────┐          │
      │   │  │ Signal EGD to Run 2nd Game Feature │     │
      │   │  └──────────────────────────────┘          │
      │   │          │                                  │
      │   │  ┌──────────────────────────────┐          │
      │   │  │  EGD Runs 2nd Screen Feature  │         │
      │   │  └──────────────────────────────┘          │
      │   │          │                                  │
      │   │          ├───────────────────┐             │
      │   │     ╱─────────╲               │             │
      │   │    ╱    Has     ╲    NO        │             │
      │   │   ╱ EGD Reported ╲─────────────┘             │
      │   │   ╲  2nd Game    ╱                           │
      │   │    ╲  Outcome?  ╱                            │
      │   │     ╲─────────╱                              │
      │   │        │ YES                                 │
      │   │  ┌──────────────────────────┐               │
      │   │  │ Award Prize to winning EGD │             │
      │   │  └──────────────────────────┘               │
      │   │        │                                     │
      │   │  ┌──────────────────────────┐               │
      │   │  │    Clear EGD Win Flag     │              │
      │   │  │      to "NOT WON"         │              │
      │   │  └──────────────────────────┘               │
      │   │        │                                     │
      │   │  ┌──────────────────────────┐               │
      │   │  │    Reset the Won Pool     │              │
      │   │  │     to Starting Value     │              │
      │   │  └──────────────────────────┘               │
      │   │        │                                     │
      │   │  ┌──────────────────────────┐               │
      │   │  │   Unsuspend Jackpot       │              │
      │   │  │     Pool Updates          │              │
      │   │  └──────────────────────────┘               │
      │   │        │                                     │
      │   └────────┴─────────────────────────────────────┘
      └────────────────────────────────────────────────
```

(1) TITLE OF INVENTION	PATENT APPLICATION DECLARATION AND POWER OF ATTORNEY - ORIGINAL APPLICATION	ATTORNEY'S DOCKET NO. 205,510

(2) CHECK APPROPRIATE BOX

As a below named Inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name:

I verily believe I am the original, first and sole inventor (if only one name is listed below) or a joint inventor (if plural inventors are named below) of the invention entitled

(1) "PRIZE AWARDING SYSTEM"

the specification of which

(2) ☐ is attached hereto.

☒ was filed on __9 August 2000__ as Application No. __PCT/AU00/00948__

and was amended on __27 April 2001__ (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge my duty to disclose information of which I am aware which is material to the examination of this application under 37 CFR 1.56(a); the invention has not been patented or made the subject of a inventor's certificate issued before the date of this application in any country foreign to the United States of America on an application filed by me or my legal representatives or assigns more than twelve months prior to this application; and

as to applications for patents or inventor's certificate on the invention filed in any country foreign to the United States prior to this application by me or my legal representatives or assigns,

(3) CHECK APPROPRIATE BOX

(3) ☐ no such applications have been filed, or

☒ such application have been filed as follows:

(4) COMPLETED DATA INDICATED IF APPLICABLE

EARLIEST FOREIGN APPLICATION(S), IF ANY, FILED WITHIN 12 MONTHS PRIOR TO THIS APPLICATION				
Country	Application Number	Date of Filing (day, month, year)	Date of Issue (day, month, year)	Priority Claimed Under 35 USC 119
(4) AU	43453/99	9 August 1999	6 April 2000	☒ Yes ☐ No
				☐ Yes ☐ No
				☐ Yes ☐ No
ALL FOREIGN APPLICATIONS, IF ANY, FILED MORE THAN 12 MONTHS PRIOR TO THIS APPLICATION				

(5) COMPLETE DATA INDICATED IF APPLICABLE

I hereby claim the benefit under Title 35, United States Code § 120 of any United States application(s) listed below, and insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, § 1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application.

(5) _____

(Application Ser. No.)   (Filing date)   (Status: patented, pending, abandoned)

(5) _____

(Application Ser. No)   (Filing date)   (Status: patented, pending, abandoned)

Power of Attorney: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith.

(4)

Jeffrey A. Schwab, Registration Number 24,490
Jay S. Cinamon, Registration Number 24,156

Dennis A. Mason, Registration Number 19,571
Thomas E. Spath, Registration Number 25,928

Send Correspondence To:
Abelman, Frayne & Schwab
150 East 42nd Street
New York, New York 10017-5612

Direct Telephone Calls To:
Jeffrey A. Schwab,
Jay S. Cinamon, Dennis A. Mason,
Thomas E. Spath at (212) 949-9022

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment or both under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full name of Sole or First Inventor Steven Brian JOHNSON	Inventor's Signature		Date 31/01/02
Residence 23 Overlord Place, Acacia Ridge, in the State of Queensland, 4110, Australia		Citizenship Australia	
Post Office Address Same as Above			
Full Name of Second Joint Inventor, If Any	Inventor's Signature		Date
Residence		Citizenship	
Post Office Address			
Full Name of Third Joint Inventor, If Any	Inventor's Signature		Date
Residence		Citizenship	
Post Office Address			
Full Name of Fourth Joint Inventor, If Any	Inventor's Signature		Date
Residence		Citizenship	
Post Office Address			
Full Name of Fifth Joint Inventor, If Any	Inventor's Signature		Date
Residence		Citizenship	
Post Office Address			
Full Name of Sixth Joint Inventor, If Any	Inventor's Signature		Date
Residence		Citizenship	
Post Office Address			